

WHAT IS CLAIMED IS:

1. A resonator comprising:
a substrate having a surface;
a conductive film provided on the surface of the substrate, the conductive film having conductor opening portions at predetermined positions, the conductor opening portions including at least two inductive regions and at least one capacitive region, the at least one capacitive region interconnecting the inductive regions; and
at least one resonator element provided for each of the at least two inductive regions, each resonator element including at least one ring-like resonance unit, each resonance unit being defined by at least one conductor line having at least one capacitive area and at least one inductive area,
wherein a first end of one conductor line is placed adjacent to one of a second end of the conductor line and a first end of another conductor line included in the same resonance unit in one of a width direction and a thickness direction to define the at least one capacitive area of each resonator element.
2. The resonator according to claim 1, wherein the at least one resonator element is provided in each of the at least two inductive regions.
3. The resonator according to claim 1, wherein the at least one resonator element is provided in the vicinity of each of the at least two inductive regions.
4. The resonator according to claim 3, wherein the at least one resonator element is provided in the vicinity of each of the at least two inductive regions such that at least an outermost one of the at least one conductor line partially overlaps an edge of the conductor opening portions defining the at least two inductive regions.

5. The resonator according to claim 1, wherein the opening portion of the capacitive region is smaller than the opening portion of the at least two inductive regions.

6. The resonator according to claim 1, wherein a first and a second of the at least two inductive regions are different in size.

7. The resonator according to claim 1, wherein a plurality of sets of conductor opening portions are provided in the conductive film, each set of conductor opening portions including at least two inductive regions and at least one capacitive region, the at least one capacitive region interconnecting the at least two inductive regions, and wherein the plurality of sets of conductor opening portions are connected together by sharing at least one inductive region of the at least two inductive regions in each set of conductor opening portions.

8. The resonator according to claim 7, wherein the plurality of sets of conductor opening portions are arranged in a matrix.

9. A filter comprising:
the resonator according to claim 1; and
signal input/output electrodes coupled with the resonator.

10. A communication apparatus comprising the resonator according to claim 1.

11. A communication apparatus comprising the filter according to claim 9.

12. A resonator comprising:
a multilayer substrate including a plurality of alternately stacked dielectric layers and conductor layers, the multilayer substrate having conductor opening portions arranged in a stacking direction of the dielectric layers and the conductor layers, the conductor opening portions forming at least two inductive regions, and at least one portion where the conductor layers face each other in the

stacking direction with the corresponding dielectric layers interposed therebetween, the at least one portion serving as a capacitive region and interconnecting the at least two inductive regions.

13. The resonator according to claim 12, wherein at least one resonator element is provided for each of the at least two inductive regions, each resonator element including at least one ring-like resonance unit, each resonance unit being defined by at least one conductor line having at least one capacitive area and at least one inductive area, wherein a first end of one conductor line is placed adjacent to one of a second end of the conductor line and a first end of another conductor line included in the same resonance unit in one of a width direction and a thickness direction to define the at least one capacitive area of each resonator element.

14. The resonator according to claim 13, wherein the at least one resonator element is provided in each of the at least two inductive regions.

15. The resonator according to claim 13, wherein the at least one resonator element is provided in the vicinity of each of the at least two inductive regions.

16. The resonator according to claim 15, wherein the at least one resonator element is provided in the vicinity of each of the at least two inductive regions such that at least an outermost one of the at least one conductor line partially overlaps an edge of the conductor opening portions defining the at least two inductive regions.

17. The resonator according to claim 12, wherein a plurality of sets of conductor opening portions are provided in the multilayer substrate, each set of conductor opening portions including at least two inductive regions and at least one capacitive region, the at least one capacitive region interconnecting the at least two inductive regions, and wherein the plurality of sets of conductor opening portions are connected together by sharing at least one inductive region of the at least two inductive regions in each set of conductor opening portions.

18. A filter comprising:
the resonator according to claim 12; and
signal input/output electrodes coupled with the resonator.
19. A communication apparatus comprising the resonator according to
claim 12.
20. A communication apparatus comprising the filter according to claim
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